

WHO Regional Office for Africa | ESPEN

ESPEN-DP-SOP-04

Soil-transmitted helminthiases: processing of endemicity and preventive chemotherapy data

Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN)

Document type	Standard operating procedure — data processing
Reference	ESPEN-DP-SOP-04
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Prepared by	ESPEN Data Team, WHO Regional Office for Africa
Scope	Endemicity, population requiring PC, PC delivered, coverage and cumulative rounds of soil-transmitted helminthiases (STH), by age group, at implementation unit (IU), country and regional level, 2013–2025
Data sources	Harmonised IU endemicity and population (SOP-01); JRF PC data of the regimens containing albendazole or mebendazole, except albendazole twice a year for LF (ALBx2); JRF version; ESPEN contemporary IU endemicity (2020); list of redistricted IUs
Outputs	STH analytical tables at IU level (by target population), country and regional level; class of JRF version by country and year (also used in SOP-05)
Processing scripts	Steps 1.6 and 1.9 (Annex A)
Related documents	SOP-00; SOP-01; SOP-02 (shared LF MDA records); SOP-05; SOP-07

Abbreviations

ALB	Albendazole	MDA	Mass drug administration
DEC	Diethylcarbamazine	PC	Preventive chemotherapy
IA	Impact assessment	Pre-SAC	Pre-school-age children
IDA	Ivermectin, diethylcarbamazine and albendazole	PZQ	Praziquantel
IU	Implementation unit	SAC	School-age children
IVM	Ivermectin	SCH	Schistosomiasis
JRF	Joint Reporting Form	STH	Soil-transmitted helminthiases
LF	Lymphatic filariasis	WRA	Women of reproductive age
MBD	Mebendazole		

1. Purpose and scope

This procedure describes how the STH data reported by countries are processed into the ESPEN STH analytical tables. STH tables are produced by age group: pre-school-age children (pre-SAC), school-

age children (SAC) and women of reproductive age (WRA), and for the total. They count PC delivered to pre-SAC, SAC and WRA with any regimen containing albendazole or mebendazole except albendazole twice a year for LF (ALBx2), including the treatment of children delivered with LF MDA and the treatment delivered with praziquantel. The programmatic background is the WHO guideline on PC for STH [1] and the monitoring and evaluation framework for schistosomiasis and STH [2].

2. Data sources

Table 1. Data sources

Source	Content used
Harmonised IU dataset (SOP-01)	STH endemicity category, population by age group, population requiring PC of WRA
JRF, PC sheets	Population targeted, treated and coverage by age group for: praziquantel with albendazole or mebendazole (PZQ+ALB/MBD); albendazole or mebendazole alone (ALB/MBD, up to three rounds a year); and, from the LF sheets, ALB+IVM, ALB+DEC and IDA
JRF, introduction sheet	Version of the form submitted by the country
Contemporary IU endemicity (2020)	Reference classification of the STH status of each IU, updated at a regional workshop with national programme and data managers (end of 2019) on the basis of the survey data available
List of redistricted IUs	As in SOP-02

3. Definitions

Table 2. Terms and indicators

Term	Definition
Endemicity categories	Categories of the earlier reporting scheme (high prevalence $\geq 50\%$, moderate 20–49%, low $<20\%$, endemic with unknown prevalence) and of the updated scheme introduced with version 4 of the JRF (prevalence 50% and above, 20–49%, 10–19%, 2–9%, surveillance $<2\%$), plus unknown, non-endemic and not reported.
Categories requiring PC	High prevalence (50% and above); moderate prevalence (20–49%); endemic with unknown prevalence; prevalence 50% and above; 20–49%; 10–19%; 2–9%.
Class of JRF version	"Earlier scheme" for versions 1 to 3 of the form, "updated scheme" from version 4 (Section 4.2).
Programme coverage	Population treated (limited to the population requiring PC) / population targeted $\times 100$, by age group and in total.
Epidemiological coverage	Population treated (limited to the population requiring PC) / population requiring PC $\times 100$; zero when the population requiring PC is below 10.
PC round	IU-year with programme coverage above zero (for the total, or for an age group in the tables by target population).
Effective PC round	IU-year with total programme coverage of at least 75% (for an age group: coverage of that group of at least 75%).

4. Processing steps

4.1 Reconciliation of reported endemicity (2013–2019)

The contemporary IU classification (2020) results from a regional workshop held at the end of 2019, to which national programme managers and data managers were invited, which updated the endemicity status of each IU on the basis of the survey data available. It is used as a benchmark and applied retrospectively to the years before the workshop (SOP-02, Section 4.1). For 2013 to 2019, a reported category "Unknown" or "Endemic/prevalence unknown" takes the contemporary category of the IU when one exists, and a reported high, moderate or low prevalence becomes non-endemic when the contemporary classification is non-endemic. A reported non-endemic category is not changed. In the contemporary classification, an IU listed without a recognised category is treated as non-endemic; IUs not listed in it keep the category reported. From 2020 onwards the reported category is kept.

4.2 Class of JRF version

Countries adopted the updated WHO monitoring and evaluation categories [2] at different times, so each country and year is assigned to the earlier or the updated scheme. The class is taken from the version of the JRF submitted (versions 1 to 3: earlier scheme; version 4 onwards: updated scheme). When the version is missing or not recognised, the country-year is assigned to the updated scheme if any of its IUs reports, before reconciliation, one of the STH or SCH categories introduced with version 4 (including the surveillance categories), and to the earlier scheme otherwise. The class is used here and in SOP-05.

4.3 Import of the PC data

- The PZQ+ALB/MBD and ALB/MBD (three rounds) records are linked to IUs as described in SOP-02, Section 4.3; the ALB+IVM, ALB+DEC and IDA records imported for LF are reused.
- Adults were not reported in the earlier forms: their fields are set to zero for country-years of the earlier scheme and for those without a class.
- Adults reported in the PZQ+ALB/MBD sheet are counted in the WRA group as reported. In the ALB/MBD sheets, adults whose category is "Other" or not stated are converted to WRA by applying the national fraction of WRA.

4.4 Combination of the regimens

- For each age group, the population targeted and the population treated of the IU-year are the largest values reported across regimens and rounds; regimens and rounds are not added together. Within the PZQ+ALB/MBD sheet, the two fields of population targeted of a group are added (only one is expected to be filled).
- The regimen of the IU-year is the one with the largest total population treated reported (PZQ+ALB/MBD, ALB/MBD, ALB+IVM, ALB+DEC or IDA).
- Totals targeted and treated are the sums of the three age groups. Only the figures by age group are used: treatment reported only as a total is not counted. From the LF sheets, only pre-SAC and SAC are counted; adults treated in LF MDA are not counted for STH. The largest total reported is kept separately for reference.

4.5 Population requiring PC

In IUs whose category requires PC (Table 2), the population requiring PC is the whole pre-SAC population and the whole SAC population of the IU, plus the population requiring PC of WRA reported by the country; in other IUs it is zero. The same rule is applied to all years and to both reporting schemes.

4.6 Coverage and rounds

- The population treated of each age group is limited to its population requiring PC.
- When people were treated but the population targeted of a group (or of the total) is missing or not above 5, it is set to the population requiring PC.
- Programme and epidemiological coverage are calculated by age group and in total (Table 2). A PC round is counted when total programme coverage is above zero and an effective round when it reaches 75%.
- Rounds and effective rounds are accumulated for each IU from 2013; new IUs created by redistricting add the rounds counted in their first parent IU in the year before their creation (SOP-02, Section 4.8).

4.7 Tables by target population

Before publication, the IU table is reorganised so that each IU and year has one record for each target population (pre-SAC, SAC, WRA and total). For each age group, a PC round is counted when the coverage of that group is above zero and an effective round when it reaches 75%, and the rounds are accumulated by IU; new IUs inherit the rounds of their parent IU for each target population. A year in which the rounds delivered did not include an age group is not counted for that group.

4.8 Country and regional indicators

Country tables sum the IU values over the IUs whose category requires PC and the IUs of low prevalence (less than 20%), by country and year. They report the number of IUs by category, the populations requiring, targeted and treated by age group and in total, the number of IUs requiring PC, with a PC round and with an effective round, programme and epidemiological coverage by age group and in total (calculated from the summed populations) and the number of IUs by regimen. IUs of low prevalence contribute their population targeted but no population treated, because their population requiring PC is zero; this lowers the programme coverage of the country. Regional tables sum the country values by United Nations subregion (within each WHO region) and year and recalculate coverage.

4.9 Finalisation and publication

Categories are given their standard identifiers, values are rounded (coverage to two decimals) and the IU (by target population), country and regional tables are written to the ESPEN analytical database.

5. Quality assurance

- Country-years recorded with an earlier version of the form but reporting new categories are listed for review; the recorded version is kept.
- A country-year with more than one version class is reported with a warning; the processing stops if a treatment record of that country-year is linked to it.
- The results of the linkage of each regimen and round are reported (codes completed or replaced, records not found, removed or duplicated).
- Records with population treated but no breakdown by age group, and age-group rounds exceeding the total, are reported when the tables by target population are built.
- Categories found in the data but not foreseen in the country tables are reported.

6. Limitations

- The population requiring PC uses the whole pre-SAC and SAC populations of the IU rather than the values reported for these groups, and the same rule for both reporting schemes.
- Several rounds delivered in a year are counted as one round; the treatment frequency recommended for each category is not assessed.
- Effective PC is defined on total programme coverage, which combines age groups.
- Albendazole delivered as ALBx2 for LF is not counted for STH, and neither are adults treated in LF MDA nor treatment reported only as a total, without breakdown by age group.
- IUs of low prevalence reporting a population targeted lower the programme coverage of the country, since their population treated is not counted.
- The reconciliation with the contemporary classification is applied to 2013–2019 only.

7. Revision

This procedure describes the processing as implemented in the versions of the R scripts listed in Annex A (October 2026). It is revised whenever a decision rule, threshold, category or data source changes, and at least once a year before the new reporting cycle. Each revision is recorded in the table below.

Version	Date	Changes
0.1	19 October 2026	First draft of SOP-04, prepared from the code of the processing scripts.

References

1. World Health Organization. Guideline: preventive chemotherapy to control soil-transmitted helminth infections in at-risk population groups. Geneva: World Health Organization; 2017. Available from: <https://www.who.int/publications/i/item/9789241550116>
2. World Health Organization. Assessing schistosomiasis and soil-transmitted helminthiasis control programmes: monitoring and evaluation framework. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/publications/i/item/9789240099364>

Annex A. Processing scripts

Step	Script	Role in this procedure
1.6	STH_AT_v05.R	Sections 4.1 to 4.6 and 4.8; class of JRF version (Section 4.2)
1.9	ESPEN_AT_Transpose_v02.R	Sections 4.7 and 4.9
–	Functions/JAP_functions.R	Import of the PC sheets (import_mda_scheme, import_t3_round), class of JRF version (complete_jrf_version), rounds by target population (pc_by_target_group, inherit_parent_pc)